Bradenhead Pressure and Flow Evaluation

Revision Date: 9/2/2015 DRAFT

Operator:	WPX ENERGY ROCKY MOUNTAIN LLC – 96850
Well Name/No.:	Jolley KP 511-16
API No.:	05-045-17346
Sec., Twp., Rng.:	16-6S-91W
Spud Date:	11/12/2009
Surface Casing:	1115'
LWSTC:	3020' (cogcc)
OHCRK:	3310' (cogcc)
MVRD:	3617' (operator); 3617' (cogcc)
RLNS:	7310' (operator)
Reported TOC:	3960' (3690' erroneously shown on Form 5 #2587137)
TOG:	5075'
Top Perforation:	5083' WFCM
TMD:	8230'

Preliminary concerns that resulted in flagging the well:

- On EPA 2015 8-Well Analysis list
- Zero bradenhead pressure reported on Form 4 Request to Complete #2053518
- Bradenhead pressure increased to 160 psi during a Williams Fork frac stage. The job was flushed prematurely, and the bradenhead pressure was vented down to zero pressure with no flow.
- Annual monitoring bradenhead pressures reported as zero in 2010 and 2011.
- From 2012 through 2014, 7-day SI bradenhead pressures have ranged from 46 psi to 107 psi, time to blow down was less than 3 minutes in 2012 and 2014 with all gas and no liquids.
- The 2013 reported data is an anomaly: 7-day SI bradenhead pressure was 75 psi, blew down in 30 minutes with 30 gallons of water (some sand also reported with the water flow)
- Moderate pressure gradient at surface casing shoe, 107 psi / 1115 ft = 0.096 psi/ft plus hydrostatic pressure gradient

Current Status:

- A 90-day bradenhead venting period was approved on 3/6/2015 after the bradenhead pressure was reportedly "approaching 150 psi." A Condition of Approval required a new 7-day bradenhead pressure reading at the end of the monitoring period. After 6/6/2015, the normal bradenhead valve status should be SI. No indication of venting on 1/24/2014 Field Inspection Report #670201196.

Induction Log Review:

- No significant, shallow water sands observed below surface casing shoe. However, the Lower Wasatch, Ohio Creek, and a portion of the Upper Williams Fork (non-productive interval) is uncemented.

Neutron-Density Log Review:

- Top of log interval was 1115'. Crossover (>= 5' thick) above top perforation observed as follows: 4780'-88'.

Post-Cementing Temperature Log:

- Slight gradient changes start at approximately 3650' and 5230', the first gradient change is consistent with the operator's reported TOC, but the TOC pick was based on the final post-remediation Advanced Cement Evaluation Tool run on 8/26/2010. The temperature log was run in 2009 prior to cement remediation. It is possible that cement reached a level of approximately 3650' during the primary attempt in 2009, but cement was then lost to the formation, prompting several remedial cement squeeze jobs in 2010.

CBL Review:

- Standard CBL review procedures and bond index calculations do not apply to this evaluation. Several cement logs are available in COGCC's well file. The following is a qualitative review of an Advanced Cement Evaluation (CAST-M) log run on 8/26/2010 after remedially cementing the well.
- Top of log is 2974'. Cement is apparent at the top of the log, and therefore, the actual TOC is likely somewhere above 2974'. The first apparent full, circumferential bond (possible seal) appears at approximately 3020', but its vertical extent is limited. Full bonding with more significant vertical extent is apparent at 3396' and 3480'. Full bonding becomes more consistent below the reported TOC of 3960'. Some intervals of excellent apparent bond are present between the TOC and the Williams Fork producing zone.

Conclusions:
Isolation was compliant with COGCC requirements at the time when this well was drilled and cemented. Surface casing setting depth exceeded 10% of TVD and TOC > 500' above TOG.

The actual production casing is uncertain (post-remediation cement log not run above 2974'). Adequate seal at and below top WFCM perforation, but circumferential bond coverage decreases above the reported TOC. Bradenhead gas may originate from the Wasatch Formation, the Mesaverde Group or some combination of the two.

Mitigation/Remediation Recommendations:
The actual production casing TOC is uncertain, making picks for remedial cement intervals uncertain. Circulation of remedial cement may not be possible (previous remedial efforts in this well were block squeezes), and the potential success of additional block squeezes to eliminate pressure is questionable. Squeezing would also risk compromising casing integrity with additional perforations. Continued annual monitoring is advised with no cement remediation recommendations.

These recommendations should be re-evaluated if another bradenhead water flow is observed, as was the case with the 2013 bradenhead blowdown event.

Bradenhead Pressure and Flow Evaluation

Revision Date: 9/3/2015 DRAFT

Operator: WPX ENERGY ROCKY MOUNTAIN LLC – 96850
Well Name/No.: Jolley KP 522-21
API No.: 05-045-17997
(API No. incorrectly reported by operator as 05-045-17797
on annual reports and on other reports in COGCC's well file)
Sec., Twp., Rng.: 21-6S-91W
Spud Date: 1/1/2011
Surface Casing: 937'
LWSTC: 3622' (cogcc)
OHCRK: 3912' (cogcc)
MVRD: 4218' (operator); 4218' (cogcc)
RLNS: 7795' (operator)
Reported TOC: 3230'
TOG: 5100'
Top Perforation: 5073' WFCM
TMD: 7905'

Preliminary concerns that resulted in flagging the well:

- On EPA 2015 8-Well Analysis list (only reason for flagging this well)
- Zero bradenhead pressure reported on Form 4 Request to Complete #2577569. This Form 4 was previously indexed incorrectly in COGCC's imaging system. The Form 4 was re-indexed to this well file on 9/2/2015.
- All operator annual reports from 2011 through 2014 show zero bradenhead pressure and no flow.

Current Status:

- Not approved for venting. Normal bradenhead valve status should be SI. A 7/24/2015 Field Inspection Report (FIR) #666801194 states, "Bradenhead valves open." Other wells exist on this pad, and the FIR did not specifically state if this was one of the wells with an open bradenhead valve. Typically, that comment is used when all wells on the pad have open bradenhead valves. **A follow-up inspection will be performed to check the valve position on this particular well.**

Induction Log Review:

- Compared to other zones in the Wasatch Formation above and below, the interval from 1130' to 1215' appears relatively sandy with more response on the induction curves. The Lower Wasatch, Ohio Creek and Upper Willams Fork are isolated.

Neutron-Density Log Review:

- Top of log interval was 937'. Crossover (>= 5' thick) above top perforation observed as follows: None.

Post-Cementing Temperature Log:

- Significant gradient change starts at approximately 3300', generally consistent with operator's reported TOC.

CBL Review:

- Casing size = 4.5"
- Theoretical Free Pipe Amplitude = 81 mV
- Estimated Continuous Interval Required @ 80% Bond for Effective Seal = 15'
- Observed free pipe amplitude = 67 mV @ 126'
- Observed 100% bond amplitude = 0.4 mV @ 7535'
- Calculated 80% bond amplitude = 1.1 mV

- First amplitude lower than 14 mV @ 3265', equivalent to 30% bond. VDL begins to improve noticeably and consistently at 3344', with most amplitudes less than 10 mV. First 80% bond @ 3394', excellent scatter on VDL. Top of first continuous 80% bond > 15' also @ 3394', excellent scatter on VDL. Qualitatively, good to excellent scatter is apparent on the VDL from 3344' to TD.

Conclusions:
Isolation was compliant with COGCC requirements at the time when this well was drilled and cemented. Surface casing setting depth exceeded 10% of TVD and TOC > 500' above TOG.

Adequate seal likely across Williams Fork, Ohio Creek, and Lower Wasatch. No bradenhead gas pressure or flow reported.

Mitigation/Remediation Recommendations:
Formations of conce[illegible]re adequately isolated. Continued annual monitoring is advised with no cement remediation recommendations.

Bradenhead Pressure and Flow Evaluation

Revision Date: 9/2/2015 DRAFT

Operator: VANGUARD OPERATING LLC – 10531
Well Name/No.: Tharp 44D-23-692
API No.: 05-045-18599
Sec., Twp., Rng.: 23-6S-92W
Spud Date: 12/7/2009
Surface Casing: 943'
LWSTC: 3245' (cogcc)
OHCRK: 3603' (cogcc)
WMFK: 3797' (operator); 3797' (MVRD, cogcc)
RLNS: 7533' (operator)
Reported TOC: 5100' (cogcc picked 5180', but VDL scatter extends up to about 5090')
TOG: 5650'
Top Perforation: 5984' WMFK
TMD: 8600'

Preliminary concerns that resulted in flagging the well:

- On EPA 2015 8-Well Analysis list (only reason for flagging this well)
- Zero bradenhead pressure reported on Form 4 Request to Complete #2577109.
- All operator annual reports from 2010 through 2014 show zero bradenhead pressure, and the bradenhead valve was reportedly left in a normally open state for that reporting period. This well was noted as "open to tank" on the 2012 with no pressure or flow reported.

Current Status:

- Approved for venting on Form 4 #2522268. The bradenhead valve was open on 6/28/2013, as indicated on Field Inspection Report #670200605.

Induction Log Review:

- No significant, shallow water sands observed below surface casing shoe. However, the L[illegible]r Wasatch, Ohio Creek, and a portion of the Upper Williams Fork (non-productive interval) is uncemented.

Neutron-Density Log Review:

- Top of log interval was 943'. Crossover (>= 5' thick) above top perforation observed as follows: 5194'-99'.

Post-Cementing Temperature Log:

- Significant gradient change starts at approximately 5200', consistent with COGCC's TOC pick.

CBL Review:

- Casing size = 4.5"
- Theoretical Free Pipe Amplitude = 81 mV
- Estimated Continuous Interval Required @ 80% Bond for Effective Seal = 15'
- Observed free pipe amplitude = N/A (appears to be cemented above the top of log at 3592' or poor calibration)
- Observed 100% bond amplitude = 3.5 mV @ 8407'
- Calculated 80% bond amplitude = 6.6 mV (uses Theoretical Free Pipe Amplitude)
- First amplitude lower than 32 mV @ 4774', equivalent to 30% bond. VDL begins to improve noticeably and consistently at 5214', with amplitudes less than 20 mV. First 80% bond @ 5238', good scatter on VDL. Top of first continuous 80% bond > 15' @ 5304', excellent scatter on VDL. Qualitatively, good to excellent scatter is apparent on the VDL from 5240' to TD, and poor to fair scatter is apparent above 5240' to the top of the log at 3592'.

Conclusions:
Isolation was compliant with COGCC requirements at the time wh[illegible]his well was drilled and cemented. Surface casing setting depth exceeded 10% of TVD and TOC > 500' above TOG.

Adequate seal likely at and below top WMFK perforation, but bond becomes fair between top perforation and TOC. No bradenhead gas pressure or flow reported.

Mitigation/Remediation Recommendations:
The operator could attempt remedial cement circulation above the existing TOC, but circulation is not guaranteed. Squeeze holes inherently risk compromising casing integrity and may result in the potential of diverting gas below the squeeze(s) into shallow formations. Continued annual monitoring is advised with no cement remediation recommendations.

Bradenhead Pressure and Flow Evaluation

Revision Date: 9/1/2015 DRAFT

Operator:	VANGUARD OPERATING LLC – 10531
Well Name/No.:	Okagawa Federal 23A-33-692
API No.:	05-045-11226
Sec., Twp., Rng.:	33-6S-92W
Spud Date:	6/3/2006
Surface Casing:	693'
LWSTC:	2207' (cogcc)
OHCRK:	2543' (cogcc)
WMFK:	2802' (operator); 2802' (MVRD, cogcc)
RLNS:	6576' (operator)
Reported TOC:	3200' (cogcc picked 2960')
TOG:	4480'
Top Perforation:	4450' WMFK
TMD:	6880'

Preliminary concerns that resulted in flagging the well:

- On EPA 2015 8-Well Analysis list (only reason for flagging this well)
- Highest bradenhead pressure reported on Form 4 Request to Complete #1516059 was 40 psi.
- All operator annual reports from 2010 through 2014 show zero bradenhead pressure, and the bradenhead valve was reportedly left in a normally open state for that reporting period.

Current Status:

- Approved for venting on Form 4 #2611830. The bradenhead valve was open on 1/26/2015, as indicated on Field Inspection Report #666800543.

Induction Log Review:

- No significant, shallow water sands observed below surface casing shoe. However, th wer Wasatch, Ohio Creek, and a portion of the Upper Williams Fork (non-productive interval) is uncemente

Neutron-Density Log Review:

- Top of log interval was 693'. Crossover (>= 5' thick) above top perforation observed as follows: 1166'-74', 1815'-24', and 3730'-35'.

Post-Cementing Temperature Log:

- Significant gradient change starts at approximately 2950', consistent with COGCC's TOC pick.

CBL Review:

- Casing size = 4.5"
- Theoretical Free Pipe Amplitude = 81 mV
- Estimated Continuous Interval Required @ 80% Bond for Effective Seal = 15'
- Observed free pipe amplitude = 91 mV @ 889'
- Observed 100% bond amplitude = 0.6 mV @ 6430'
- Calculated 80% bond amplitude = 1.6 mV
- First amplitude lower than 20 mV @ 3060', equivalent to 30% bond. VDL begins to improve noticeably and consistently at 3826', with most amplitudes less than 50 mV. First 80% bond @ 4380', good scatter on VDL. Top of first continuous 80% bond > 15' @ 5748', excellent scatter on VDL. However, qualitatively, good to excellent scatter is apparent on the VDL from 4650' to TD, and fair to good scatter is apparent above 4650'.

Conclusions:
Isolation was compliant with COGCC requirements at the time w is well was drilled and cemented. Surface casing setting depth exceeded 10% of TVD and TOC > 500' above TOG.

Adequate seal likely at and below top WMFK perforation, but bond becomes fair between top perforation and TOC. No bradenhead gas pressure or flow reported.

Mitigation/Remediation Recommendations:
The operator could attempt remedial cement circulation above the existing TOC at 2960', but circulation is not guaranteed. Squeeze holes inherently risk compromising casing integrity and may result in the potential of diverting gas below the squeeze(s) into shallow formations. Continued annual monitoring is advised with no cement remediation recommendation

Bradenhead Pressure and Flow Evaluation

Revision Date: 9/1/2015 DRAFT

Operator: URSA OPERATING COMPANY LLC - 10447
Well Name/No.: CSF #21B-07-07-91
API No.: 045-11122
Sec., Twp., Rng.: 7-7S-91W
Spud Date: 10/17/2005
Surface Casing: 869'
LWSTC: 2648' (cogcc)
OHCRK: 3378' (cogcc)
WMFK: 3546' (operator); 3546' (MVRD, cogcc)
CMEO: 6954' (operator)
RLNS: 7278' (operator)
Reported TOC: 4050'
TOG: 5119'
Top Perforation: 5277' WFCM
TMD: 7467'

Preliminary concerns that resulted in flagging the well:

- On EPA 2015 8-Well Analysis list
- Highest bradenhead pressure reported on Form 4 Request to Complete #1526627 was 90 psi.
- Bradenhead pressures reported as zero 1/15/2011 and 120 psi 1/14/2012. Pressure blew down on 1/14/2012 in less than 10 minutes with no liquids.
- Operator reported 50 psi blown down to 40 psi with "black fluid at 40 psi", on 8/29/2012, 10/1/2013, and 12/24/2014 (operator notes for all three events were identical).
- Does not blow down completely, remaining pressure of 40 psi while producing black fluid
- Moderate pressure gradient at surface casing shoe, 120 psi / 869 ft = 0.14 psi/ft plus hydrostatic pressure gradient

Current Status:

- Not approved for venting. Normal bradenhead valve status should be SI. No indication of venting on 6/13/2014 Field Inspection Report #6752000077.

Induction Log Review:

- No significant, shallow water sands observed below surface casing shoe. However, the Lower Wasatch, Ohio Creek, and a portion of the Upper Williams Fork (non-productive interval) is uncemented.

Neutron-Density Log Review:

- Top of log interval was 869'. Crossover (>= 5' thick) above top perforation observed as follows: 4489'-94' and 5127'-40'

Post-Cementing Temperature Log:

- Significant gradient change starts at 4000', near the operator's reported TOC of 4050'.

CBL Review:

- Casing size = 4.5"
- Theoretical Free Pipe Amplitude = 81 mV
- Estimated Continuous Interval Required @ 80% Bond for Effective Seal = 15'
- Observed free pipe amplitude = 97 mV @ 3810'
- Observed 100% bond amplitude = 0.5 mV @ 7196'
- Calculated 80% bond amplitude = 1.4 mV
- First amplitude lower than 20.0 mV @ 4166', equivalent to 30% bond. VDL begins to improve noticeably at 4151', with amplitudes consistently less than 50 mV. First 80% bond @ 7091', excellent scatter on VDL. Top of first continuous 80% bond > 15': None. However, qualitatively, good to excellent scatter is apparent on the VDL from 5690' t[illegible]0. Bond is fair to good from 4050' to 5690'.

Conclusions:
Isolation was compliant with COGCC requirements at the time when this well was drilled and cemented. Surface casing setting depth exceeded 10% of TVD and TOC > 500' above TOG.

Quality of the cement bond appears to be good to fair in the upper portion of the WMFK perforated interval from the good cement top at 5690' to the top perforation at 5277'. Bradenhead gas has become negligible, as reported in recent annual reports, but flowing liquid is a concern when the bradenhead valve is open. The source of liquid may be from the Lower Wasatch, Ohio Creek, the Upper Williams Fork, or some combination of water-bearing zones in those formations.

Mitigation/Remediation Recommendations:
Collect liquid samples from bradenhead valve and produced water from the well. Analyze to evaluate similarities or differences between the two samples in an effort to determine the source of the flow. Contact COGCC Environmental staff for analysis requirements.

Cement remediation advised with an initial goal of isolating the Lower Wasatch, Ohio Creek, the Upper Williams Fork interval from the existing TOC up to 2598' (200' above COGCC pick for top of "Lower Wasatch"). However, circulation and full coverage of this interval may not be possible. Targeted squeeze(s) will be considered.

This well has Federal minerals, and BLM has primary jurisdiction for the wellbore. BLM would need to take the lead on remediation requirements, if any.

Bradenhead Pressure and Flow Evaluation

Revision Date: 9/2/2015 DRAFT

Operator:	VANGUARD OPERATING LLC - 10531
Well Name/No.:	GGU Swanson 33C-29-691
API No.:	045-19619
Sec., Twp., Rng.:	29-6S-91W
Spud Date:	9/6/2010
Surface Casing:	790'
LWSTC:	2747' (cogcc)
OHCRK:	3115' (cogcc)
MVRD:	3426' (operator), 3426' (cogcc)
RLNS:	6993' (operator)
Reported TOC:	3050'
TOG:	4643'
Top Perforation:	4649' WMFK
TMD:	7323'

Preliminary concerns that resulted in flagging the well:

- On EPA 2015 8-Well Analysis list
- Highest bradenhead pressure reported on Form 4 Request to Complete #1241877 was 150 ps
- The operator reported a bradenhead pressure of 225 psi via Form 4 #2054679 on 11/11/2010.
- The operator completed a formal Bradenhead Test (Form 17 #2221318) on 1/12/2011. The bradenhead reportedly built to 10 psi in 7 days while SI and blew down to zero instantly when opened with no liquids (insufficient gas to sample).
- All operator annual reports from 2011 through 2014 show zero bradenhead pressure, and the bradenhead valve was reportedly left in a normally open state for that reporting period.

Current Status:

- Approved for bradenhead venting on Form 4 #2054679 and Form 4 #2523428. The bradenhead valve was open on 7/17/2015, as indicated on Field Inspection Report #666801156.

Induction Log Review:

- No significant, shallow water sands observed below surface casing shoe. However, the Lower Wasatch and an upper portion of the Ohio Creek Formation are uncemented.

Neutron-Density Log Review:

- Top of log interval was 804'. Crossover (> 5' thick) above top perforation observed as follows: 972'-84', 1083'-88', 1766'-71', and 3686'-96'.

Post-Cementing Temperature Log:

- Significant gradient change starts at approximately 3050', consistent with operator's reported TOC.

CBL Review:

- Casing size = 4.5"
- Theoretical Free Pipe Amplitude = 81 mV
- Estimated Continuous Interval Required @ 80% Bond for Effective Seal = 15'
- Observed free pipe amplitude = 79 mV @ 2785'
- Observed 100% bond amplitude = 0.1 mV @ 7178'
- Calculated 80% bond amplitude = 0.4 mV

- First amplitude lower than 11 mV @ 3124', equivalent to 30% bond. VDL improves at 3130', amplitudes mostly below 10 mV. First 80% bond @ 3390', excellent scatter on VDL. Top of first continuous 80% bond > 15' @ 3458'. Qualitatively, good to excellent scatter is apparent on the VDL from 3124' to TD, except for a few intervals with fair bond below 6130'.

Conclusions:

Isolation was compliant with COGCC requirements at the time this well was drilled and cemented. Surface casing setting depth exceeded 10% of TVD and TOC > 500' above TOG.

Adequate seal likely across WMFK perforations and the non-productive upper portion of the Williams Fork Formation. Most of the Ohio Creek is also cemented, but less cement bond is apparent toward the top of the formation. The Lower Wasatch is not cemented. Bradenhead gas pressure and flow has reportedly been zero since the original high pressure reports in 2010.

Mitigation/Remediation Recommendations:
The operator could attempt remedial cement circulation above the existing TOC, but circulation is not guaranteed. Squeeze holes inherently risk compromising casing integrity and may result in the potential of diverting gas below the squeeze(s) into shallow formations. Continued annual monitoring is advised with no cement remediation recommendations.

Bradenhead Pressure and Flow Evaluation

Revision Date: 9/1/2015 DRAFT

Operator: ENCANA OIL & GAS (USA) INC – 100185
Well Name/No.: Aspen RM 10-6C (F10E)
API No.: 05-045-09123
Sec., Twp., Rng.: 10-7S-92W
Spud Date: 2/22/2003
Surface Casing: 1012'
LWSTC: 1620' (cogcc)
OHCRK: 2013' (cogcc)
WMFK: 2736' (operator); 2192' (MVRD, cogcc)
RLNS: 5888' (operator)
Reported TOC: surface
TOG: not reported
Top Perforation: 3771' WMFK
TMD: 6000'

Preliminary concerns that resulted in flagging the well:

- On EPA 2015 8-Well Analysis list
- From 2010 through 2014, 7-day SI bradenhead pressures have ranged from 104 psi to 129 psi, time to blow down has been one minute or less with some water produced during the blowdown about half the time.
- Moderate pressure gradient at surface casing shoe, 129 psi / 1012 ft = 0.13 psi/ft plus hydrostatic pressure gradient

Current Status:

- Not approved for venting. Normal bradenhead valve status should be SI. No indication of venting on 4/7/2015 Field Inspection Report #666800846.

Induction Log Review:

- Compared to other zones in the Wasatch Formation above and below, the interval from 1250' to 1400' appears relatively sandy with larger shallow to deep induction curve separation. The Lower Wasatch, Ohio Creek and Upper Willams Fork are isolated.

Neutron-Density Log Review:

- Top of log interval was 1012'. Crossover (>= 5' thick) above top perforation observed as follows: None.

CBL Review:

- Casing size = 7"
- Theoretical Free Pipe Amplitude = 62 mV
- Estimated Continuous Interval Required @ 80% Bond for Effective Seal = 33'
- Observed free pipe amplitude = N/A (cemented to surface)
- Observed 100% bond amplitude = 1.8 mV @ 5842'
- Calculated 80% bond amplitude = 3.7 mV (uses Theoretical Free Pipe Amplitude)
- Analysis of CBL with no pressure: First amplitude lower than 21 mV @ 78', equivalent to 30% bond (disregards extreme top of log). VDL scatter is variable throughout the log, but generally, it appears fair to good. Most amplitudes are less than 50 mV, but amplitudes approach or exceed 50 mV in intervals with poor bond. First 80% bond @ 4942', good scatter on VDL. Top of first continuous 80% bond > 3[illegible] NONE.
- A second CBL was run under pressure. A microannulus may be present.

Conclusions:
Isolation was compliant with COGCC requirements at the time when this well was drilled and cemented. Surface casing setting depth exceeded 10% of TVD and TOC > 200' above shallowest producing horizon.

The production casing is cemented to surface, but fair to poor bond is evident in several intervals throughout the well. Bradenhead gas may originate from the Wasatch Formation, the Mesaverde Group or some combination of the two.

Mitigation/Remediation Recommendations:
Collect bradenhead and production gas samples for comparison in an effort to identify the source of the bradenhead gas. If sufficient water is present during bradenhead blowdown, also collect a water sample. Contact COGCC Environmental staff for analysis requirements.

The production casing is cemented to surface, preventing circulation of remedial cement, and the potential success of block squeezes to eliminate pressure is questionable. Squeezing would also risk compromising casing integrity with additional perforations. Continued annual monitoring is advised with no cement remediation recommendations..